UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/13/08*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,7,15,17,18,24,26,27,37,39,41-43,51 and 53* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,7,15,17,18,24,26,27,37,39,41-43,51 and 53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   In response to the Office Action mailed December 13, 2007, applicant submitted

an amendment filed on March 13, 2008, in which the applicant amended and requested

reconsideration.

Response to Arguments

2.   Applicant argues that none of the references cited teach the extension of at least

one of the first and second arcs such that the two arcs are directly connected at a

different frame. Further, Applicant argues that the cited art fails to teach or suggest that

a global score is based on a first score and a third score, where the third score itself is

combined with a technique to incorporate word level language probabilities at an end of

a first phoneme of a word. Applicants' arguments are persuasive but are moot in view

of new grounds of rejections.

Claim Objections

3.   Claims 15 and 24 are objected to because of the following informalities:

It is believed that a "third arc", should be changed to a --second arc--. None of

the arguments address a "third arc" and independent claims 1 and 51 teach a --second

arc-- connection.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   **Claim 1, 3-4, 7, 15, 17-18, 24, 26-27, 37, 39, 41-43, 51 and 53** are rejected

under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (PGPUB 2003/0204399),

hereinafter referenced as Wolf in view of Chaudhari et al. (USPN 7,031,923),

hereinafter referenced as Chaudhari and in further view of Wegmann et al. (USPN

6,224,636), hereinafter referenced as Wegmann.

        Regarding **claim 1**, Wolf discloses a method, system and article, hereinafter

referenced as a method for processing a speech signal, comprising:

        receiving an input speech signal (spoken queries; column 1, paragraph 0013);

        constructing a phoneme lattice for the input speech signal (lattice; column 2,

paragraphs 0020-23 with column 4, paragraph 0055);

        searching the phoneme lattice to produce a likelihood score for each potential

path (likelihood of paths; column 3, paragraph 0038);

        determining a processing result for the input speech signal based on the

likelihood score of each potential path (likelihood scores of path; column 3, paragraphs

0033-0040);

segmenting an input speech signal into frames (word-level lattices; column 2, paragraph 0020 with column 3, paragraphs 0033-0040);

extracting acoustic features for a frame of the input speech signal (acoustic information; column 2, paragraphs 0022-0023 with column 1, paragraph 0013);

determining K-best initial phoneme paths leading to the frame based on a first score of each potential phoneme path leading to the frame (best scoring path; column 3, paragraphs 0033-0040); and

calculating a second score for each of the K-best phoneme paths for the frame (confidence scores; column 2, paragraph 0021 with column 3, paragraphs 0033-0040), but does not specifically teach determining vertices and arc parameters of the phoneme lattice for the input speech signal and an extension of at least one of first and second arcs such that the two arcs are directly connected at a different frame.

Chaudhari discloses a speech recognition method (verbal verification of spoken sentence; abstract) comprising determining arc parameters of the phoneme lattice for the input speech signal (arc; column 3, lines 6-13 and column 4, lines 9-25 with column 6, lines 19-40);

wherein searching the phoneme lattice comprises:

receiving a phoneme lattice (figure 2 with phonemes; column 5, lines 11-26);

traversing the phoneme lattice via potential paths (paths; column 3, lines 6-13 and column 4, lines 9-25 with column 5, line 65 - column 6, line 40);

computing a score (score) for a traversed path based on at least one of a

phoneme confusion matrix and a plurality of language models (figures 1 and 2 with

column 6, line 10 -column 8, line 29); and

modifying the score for the traversed path by allowing repetition of phonemes

allowing flexible endpoints for phonemes (phonemes; figure2) in a path (path) such that

at least one of a first arc that ends at a first frame and a second arc that starts at a third

frame is extended so that the first arc and the second arc are directly connect at a

second frame (frame; column 6, lines 19-64 with column 3, line 6 - column 4, line 25),

for verifying spoken words and sentences.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Wolf's method wherein it is described above, for

competing decoding paths if a future utterance does not comply with the enrolled words

(column 4, lines 9-25).

Wolf in view of Chaudhari discloses a speech recognition method, but does not

specifically teach determining vertices.

Wegmann discloses a method of determining vertices (column 8, line 36 -

column 9, line 65), to construct a recognition hypothesis.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Wolf in view of Chaudhari's method wherein it

generates vertices, as taught by Wegmann, such that the recognition hypothesis

corresponds to a path through the lattice (Column 8, lines 36-50).

Regarding **claims 3, 17, 39 and 53**, it is interpreted and rejected for the same reasons as set forth in claim 1. In addition Wolf discloses a method further comprising:

clustering together K-best initial phoneme paths for at least one consecutive frame (single best scoring path; column 3, paragraphs 0033-0040); and

selecting M-best refined phoneme paths among the clustered phoneme paths based on second scores of these paths (best scoring path; column 3, paragraphs 0033-0040).

Regarding **claims 4, 18 and 26**, Wolf discloses a method wherein the first score and the second score comprise a score based on phoneme acoustic models and language models (model; column 2, paragraph 0024 with column 4, paragraphs 0051-0055).

Regarding **claims 7 and 43**, Wolf discloses a method wherein determining the processing result comprises determining at least one of the following: at least one candidate textual representation of the input speech signal and a likelihood that the input speech signal contains targeted keywords (text transcript; column 1, paragraph 0006).

Regarding **claims 15 and 51**, it is interpreted and rejected for the same reasons as set forth in claim 1. In addition, Wolf discloses a method for distributing speech processing, comprising:

receiving an input speech signal by a client (spoken query; column 3, paragraphs 0033-0040);

constructing a phoneme lattice for the input speech signal by the client (lattice; column 3, paragraphs 0033-0040 with column 4, paragraph 0040);

transmitting the phoneme lattice from the client to a server (column 3, paragraphs 0033-0040 with column 4, paragraph 0040); and

searching the phoneme lattice to produce a result for the input speech signal for the purpose of at least one of recognizing speech and spotting keywords, in the input speech signal (speech recognition; column 3, paragraphs 0033-0040 with column 4, paragraph 0040).

Regarding **claims 24**, it is interpreted and rejected for the same reason as set forth in claim 15. In addition, Wolf discloses a speech processing system comprising:

a plurality of models for lattice construction (column 3, paragraphs 0033-0040 and column 4, paragraph 0055); and

a plurality of models for lattice search (column 3, paragraphs 0033-0040 and column 4, paragraph 0055).

Regarding **claim 27**, it is interpreted and rejected for the same reasons as set forth in the combination of claims 21 and 24.

Regarding **claim 37**, Wolf discloses an article, comprising a machine accessible medium having content stored thereon, wherein when the content is accessed by a processor, the content provides for processing a speech signal (executed in a computer; paragraph 0053):

receiving an input speech signal (spoken queries; column 1, paragraph 0013);

constructing a phoneme lattice for the input speech signal (lattice; column 2,

paragraphs 0020-23 with column 4, paragraph 0055);

searching the phoneme lattice to produce a likelihood score for each potential

path (likelihood of paths; column 3, paragraph 0038);

determining a processing result for the input speech signal based on the

likelihood score of each potential path (likelihood scores of path; column 3, paragraphs

0033-0040);

segmenting an input speech signal into frames (word-level lattices; column 2,

paragraph 0020 with column 3, paragraphs 0033-0040);

extracting acoustic features for a frame of the input speech signal (acoustic

information; column 2, paragraphs 0022-0023 with column 1, paragraph 0013);

determining K-best initial phoneme paths leading to the frame based on a first

score of each potential phoneme path leading to the frame (best scoring path; column 3,

paragraphs 0033-0040); and

calculating a second score for each of the K-best phoneme paths for the frame

(confidence scores; column 2, paragraph 0021 with column 3, paragraphs 0033-0040),

but does not specifically teach determining vertices and arc parameters of the phoneme

lattice for the input speech signal and calculating a second score for each of the K-best

phoneme paths for the frame, the second score corresponding to a global score based

on the first score and a third score combined for each of the K-best phoneme paths for

the frame, wherein the third score is combined with a technique to incorporate word-

level language probabilities at an end of a first phoneme of a word..

Chaudhari discloses a speech recognition method (verbal verification of spoken sentence; abstract) comprising calculating a second score for each of the K-best phoneme paths for the frame, the second score corresponding to a global score based on the first score and a third score combined for each of the K-best phoneme paths (best path) for the frame, wherein the third score (score) is combined with a technique to incorporate word-level language probabilities at an end of a first phoneme (phoneme) of a word (column 5, line 11 – column 8, line 29), for verifying spoken words and sentences.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolf's method wherein it is described above, for competing decoding paths if a future utterance does not comply with the enrolled words (column 4, lines 9-25).

Wolf in view of Chaudhari discloses a speech recognition method, but does not specifically teach determining vertices.

Wegmann discloses a method of determining vertices (column 8, line 36 - column 9, line 65), to construct a recognition hypothesis.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolf in view of Chaudhari's method wherein it generates vertices, as taught by Wegmann, such that the recognition hypothesis corresponds to a path through the lattice (Column 8, lines 36-50).

Regarding **claims 41-42**, it is interpreted and rejected for the same reason as set forth in claim 1.

Conclusion

5.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to JAKIEDA R. JACKSON whose telephone number is

(571)272-7619. The examiner can normally be reached on Monday-Friday from

5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ
June 4, 2008
                          /David R Hudspeth/
               Supervisory Patent Examiner, Art Unit 2626